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Title

WEAR PAD

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Background of Invention

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The invention relates to a specially-designed wear pad for insertion between a load to be lifted and the strap, band, rope, wire cable, or chain of a lifting device for protecting both the load and the chain, wire cable, rope, band or strap used for lifting from damage while the load is being lifted. This wear pad includes a generally cylindrically shaped edge protector with a cut out section, which edge protection contains raised edges on the outside surface thereof at each end of the wear pad. The wear pad is designed to be attached to the load to be lifted and remains with the load during the lifting procedure.

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Edge protectors for insertion between a load to be lifted and a lifting element, such as a chain or wire cable of a crane, hoist or other lifting device, are well-known in the art, as shown for example in U.S. Patent Nos. 2,793,904, 3,747,341, 4,011,632 and 5,114,101.

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In addition, devices specially-designed to protect the chain or wire cable of a lifting device from abrasion during a load lifting operation are disclosed by U.S. Patent No. 2,793,904 and 4,842,914.

A particular design for a c-shaped attachment device,

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5 (18) for use with a cable for attaching to and raising long,
heavy structural beams is disclosed in U.S. Patent No.
5,098,143. The device which is used to hold the sling
assembly of the lifting device, is a c-shaped attachment
device (11) containing a pair of bolts (19, 20), which are
10 designed to be tightened to attach to the load being lifted,
such as a steel plate.

U.S. Patent No. 4,842,914 discloses an edge protector
(1) for use with a load to be lifted by a lifting device,
which comprises a first and second angle arms (5, 6) having
15 interior faces (7) for placement against the load and outer
faces (8) which form a continuous c-shaped surface having a
guide groove (10) attached to that c-shaped surface for
accommodating the wire or chain of the lifting device.

While these devices are useful to assist in the lifting
20 of loads by means of a cable or other lifting device,
improvements in such edge protectors are still necessary.

Accordingly, it is an object in the invention to
provided an improved wear pad containing a generally
cylindrical-shaped edge protector with a cut out section and
25 raised edges on the outside surface of each end of the edge
protector.

It is further object of the invention to disclose a
wear pad for insertion between a load to be lifted and a
lifting device comprising a cylindrical-shaped edge

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5 protector with a cut out section containing an attachment element for attaching the edge protector to the load being lifted by the lifting device.

10 These and other objects can be obtained by the wear pad which is disclosed in the following specification taken in connection with the accompanying drawings.

Summary of the Invention.

15 The present invention is a wear pad (10) for insertion between a load to be lifted and a chain or wire cable of a crane, hoist or other lifting device, comprising a cylindrical-shaped edge protector (20) with a cut out section, which has been removed, containing raised edges (28, 30) on the outside surface (36) of the edge protector located at each end (24, 26) of the edge protector, which raised edges (28, 30) preferably extend around the circumference of the edge protector (20).

20 Preferably, the wear pad further comprises a slot (32) cut into the center of the cylindrical edge protector extending from one end (24) to the other end (26) of the wear pad (20).

25 A preferred embodiment of the invention includes an attachment element, secured to an inner surface (22) of the cut out section of the wear protector (20), for attaching the edge protector to the load being lifted by the lifting device, whereby this attachment element preferably comprises

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5 a magnet (34).

Brief description of the Drawings.

Figure 1 is a perspective view of one embodiment of the wear pad.

Figure 2 is an end view of the wear pad of Figure 1.

10 Figure 3 is a side view of the wear pad of Figure 1.

Figure 4 is a perspective view of a second embodiment of the wear pad.

Figure 5 is a perspective view of a third embodiment of the wear pad.

15 Detail description of a preferred embodiment.

Referring more particularly to the drawings, the present invention comprises a wear pad (10) which is preferably formed as a generally cylindrical-shaped, edge protector (20) containing a cut out section removed from the cylindrical shape, as shown in Figures 1 and 2, and first and second ends (24, 26), each of which contains an outwardly extending raised edge (28, 30) on the outside surface (36) of the edge protector (20). Preferably a slot (32) is cut into the inside surface (22) of the cut out section, which extends from one end (24) of the edge protector (20) to the other end (26) of the edge protector (20), preferably in the center of the cylindrical-shaped edge protector (20) as shown in Figures. 1 and 2. Preferably an attachment element, such as a magnet (34), is

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5 secured to, or contained within, the inner surface (22) of the cylindrical-shaped edge protector (20), preferably on or near the inside surface (22) of the cut out section.

10 The generally cylindrical shape of the wear pad can be formed in any size which will be useful as a wear pad for insertion between a load to be lifted and the chain or wire cable of a crane, hoist or other lifting device. The diameter of the generally cylindrical-shaped edge protector can be from about 2 inches to about 2 feet or more. The angle of the arc of the inside surface (22) of this cut out section depends on its use. Preferably the angle of the arc ranges from about 45° to about 270°, preferably from about 45° to about 120°, and most preferably from about 60° to about 120°, as shown in Figure 2.

15 When the inside surface (22) of the cut out section is placed against the load, the chain or wire cable of the crane, hoist or other lifting device contacts the outside surface (36) of the cylindrical-shaped edge protector (20). This prevents the load from being damaged by contact with the chain or wire cable of the lifting device.

20 The ends (24, 26) of the cylindrical-shaped edge protectors (20) are preferably from about 1 inch to about 4 inches greater in diameter than the remaining diameter of the edge protector (20) as shown in Figures 1 and 3 and extend outwardly from the outside surface (36) of the

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5 cylindrical shaped edge protector (20) at least about 1/2 to
about 2 inches. These ends (24, 26) of the cylindrical-
shaped edge protectors preferably extend outwardly a
distance equal to or greater than a substantial portion of
the diameter of the chain or wire cable of the lifting
10 device. This structure, of the wear pad (10), whereby the
raised edges (28, 30) of the ends (24, 26) extend outward
from its outside surface (36), limits or prevents damage to
the chain or wire cable in case the load impacts an object,
such as a wall or column.

15 The cylindrical-shaped edge protector (20) preferably
contains a slot (32) running down the center of the edge
protector (20) at the point where the arms (38, 40) of the
inside surface of the cut out section (22) meet as shown in
Figure 1. One of the primary purposes of this slot (32) is
20 to relieve stress on the edge protector (20) when in use.
This slot (32) can be of any size and shape that accomplish
this purpose. In one preferred embodiment this slot (32)
is circular in cross section and extends from one end (24)
to the opposite end (26) of the edge protector as shown in
25 Figures 1 and 2. Its diameter can vary from 0.25 inch or
more, as needed.

In a preferred embodiment an attachment element is
secured inside the inside surface (22) of the cut out
section to attach the edge protector (20) to the load being

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5 lifted. In one preferred embodiment this attachment
element is a plurality of magnets (34), which are embedded
into the surface (22) of the cut out section as shown in
Figure 1. Two or more magnets may be embedded in each arm
(38, 40) of the edge protector (20), as desired. Other
10 alternative attachments elements may also be used, such as
hook and loop fasteners, or a bolt mechanism or other
conventional attachment methods, as are known in the
industry.

15 In one embodiment of the invention each arm (38, 40) of
the cylindrical shaped edge protector is approximately the
same width, i.e. preferably from about 1 - 4 inches in width
as shown in Figures 1 and 2. In an alternative embodiment,
as shown in Figure 4, one arm (142) is substantially longer
than the other arm (138). By use of the extended length arm
20 (142), the edge protector (120) of the alternative
embodiment can be placed under a load and retain contact
with that load even if the load is not stacked completely
level. For example, if different sheets of metal are
stacked in a load and the edges of those sheets do not line
25 up properly, this embodiment of the invention with a longer
arm (142) is helpful in supporting the load.

 In another preferred embodiment of the invention as
shown in Figure 5, the outside surface (236) of the edge
protector (220) only extends through an arch of about 45 to

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5 about 120°, preferable from about 60 to about 120°. In this
embodiment the inside surface (222) is preferable formed in
a perpendicular cross-section and acts as the support for
the load. The outside raised edges (228, 230) of this edge
protector (220) are preferably from about 1 inch to about 5
10 inches in width to provide support for the load. This
embodiment uses less material than the first embodiment (10)
and thus is lighter and less expensive to manufacture.

The edge protectors (20, 120, 220) are preferable
formed from a high quality, durable plastic material, such
15 as polypropylene. Preferably the product is injection
molded in the desired shape.

In operation, the inside surface (22) of the cut out
section of the cylindrical shaped edge protector (20), or
the inside surface (122, 222) of the alternative
20 embodiments' edge protectors (120, 220), are placed against
the load. Preferably, the edge protector (20,120,220) is
held in place against the load by attachment elements, such
as magnets (34, 134, 234). The lifting elements, such as a
chain or wire cable of a crane, hoist or other lifting
25 device, is then placed against the outside surface (36, 136,
236) of the edge protector (20, 120, 220) and tightly
secured in position. The raised outside edges (28, 30, 128,
130, 228, 230) located at each end of the edge protector
(20, 120, 220) prevent the chain or wire from sliding off of

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5 the edge protector (20, 120, 220) and also protect the chain
or wire from abrasion during the load lifting operation.
Once the load has been lifted to the particular desired
location and the pressure is taken off of the chain or wire
cable, the edge protector (20, 120, 220) can be removed and
10 reused.

It will be apparent from the foregoing that while a
particular form of the invention has been illustrated and
described, various modifications can be made without
departing from the scope of the invention.

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